

BAGHDAD INTERNATIONAL AIRPORT  
POWER SYSTEM ENHANCEMENT  
BAGHDAD, IRAQ

SUSTAINMENT ASSESSMENT

**SIGIR PA-07-097**  
**APRIL 26, 2007**

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## **SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION**

April 26, 2007

**MEMORANDUM FOR DIRECTOR, IRAQ RECONSTRUCTION MANAGEMENT OFFICE  
COMMANDING GENERAL, MULTI NATIONAL SECURITY  
TRANSITION COMMAND-IRAQ  
COMMANDING GENERAL, GULF REGION DIVISION, U.S.  
ARMY CORPS OF ENGINEERS**

**SUBJECT: Report on Baghdad International Airport Power System Enhancement, Baghdad, Iraq  
(Report Number SIGIR PA-07-097)**

The Office of the Special Inspector General for Iraq Reconstruction is conducting a series of assessments to assess the current condition of completed projects subsequent to their transition to the Government of Iraq to determine whether the projects are likely to remain operational.

We are providing this report for your information and use. The report addresses generation installation performed at the Baghdad International Airport in Baghdad, Iraq, to determine if the project is likely to remain operational after its transition to the Government of Iraq. These assessments were made to provide you and other interested parties with real-time information on relief and reconstruction projects to enable appropriate action to be taken, if warranted.

Comments received from the Iraq Reconstruction Management Office in response to a draft of this report addressed the recommendations, and the actions taken and planned should address the issues we identified. As a result, comments to this final report are not required.

We appreciate the courtesies extended to our staff. If you have any questions please contact Mr. Brian Flynn at [brian.flynn@sigir.mil](mailto:brian.flynn@sigir.mil) or at 914-360-0607. For public or congressional queries concerning this report, please contact SIGIR Congressional and Public Affairs at [publicaffairs@sigir.mil](mailto:publicaffairs@sigir.mil) or at 703-428-1100.

Stuart W. Bowen, Jr.  
Inspector General

# **Special Inspector General for Iraq Reconstruction**

**SIGIR-PA-07-097**

**April 26, 2007**

## **Baghdad International Airport Power System Enhancement Baghdad, Iraq**

### **Synopsis**

**Introduction.** This project assessment was initiated as part of our continuing assessments of selected United States Agency for International Development reconstruction activities. The overall objective was to determine whether projects are operating at the capacity stated in the original contract or task order. To accomplish this, we determined if the project was at full capability or capacity when accepted by the United States Government, when transferred to Iraqi operators, and when observed by the Special Inspector General for Iraq Reconstruction. We conducted this limited scope assessment in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included an engineer/inspector and an auditor/inspector.

The United States Agency for International Development had a prime contract, SPU-C-00-04-00001-00, with Bechtel National, Inc., which provided engineering, procurement, and construction services in support of the overall Iraq Infrastructure Reconstruction Program. A cost plus fixed fee contract EEE-C-00-03-00018-00, under the prime contract's contract line item number 0010, Job Order Number 03-008, required the purchase and installation of 18 megawatts of electrical generation, which was required for a continuous and reliable supply of electricity at the Baghdad International Airport.

**Project Assessment Objective.** The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties to enable appropriate action, when warranted. Specifically, we determined whether the project was operating at the capacity stated in the original contract.

**Conclusion.** The Job Order required the contractor to purchase and install 18 megawatts of electrical generation, and the objective of the Job Order was met. The contractor installed 17 new generator sets with a total capacity of approximately 22 megawatts. The contractor turned the generator sets over to the United States Government, who then provided the generator sets to the Iraqi government on 11 September 2005. The Iraqi government did not sign any turnover documentation.

However, when the Special Inspector General for Iraq Reconstruction personnel inspected the generator sets on 3 March 2007, they found that 10 of the 17 sets were not operational. Five Cummins and two Caterpillar generator sets had not been maintained, and the three large General Electric generator sets had not been operated since the turnover. In order to achieve and sustain the necessary power production capability of the power plant, the Cummins and Caterpillar generator sets require repair and maintenance work. In addition, the General Electric generators require an inspection before operating and maintenance work determined by the inspection.

As a result, the current operating capacity of the Baghdad International Airport is approximately 6 megawatts, not the 18 megawatts of installed electrical generation. The total cost of the project was \$11.8 million, and currently approximately \$8.6 million worth of generator sets are non-operational.

**Corrective Action.** The Department of State, Iraq Reconstruction Management Office, Electricity Section, stated that the Electricity Section was in the process of repairing the connection between the Iraqi national grid and the Baghdad International Airport power grid, so the Baghdad International Airport may use power from the Iraqi national grid. However, the generators are still required due to unreliable power from the grid and terrorist attacks on the national grid.

**Recommendations.** The Iraq Reconstruction Management Office should coordinate with the appropriate Iraqi Ministry officials and develop plans to:

1. Perform the necessary critical repairs to the Cummins, Caterpillar, and General Electric generator sets.
2. Implement an effective Operations and Maintenance plan with a trained staff and spare parts for the Baghdad International Airport.

**Management Comments.** The Iraq Reconstruction Management Office generally concurred with the information, conclusions, and recommendations contained in the draft report. However, the Iraq Reconstruction Management Office, Electricity would only be able to provide advice to the Ministry of Electricity.

The United States Agency for International Development provided comments suggesting a number of clarifying points that the Special Inspector General for Iraq Reconstruction considered and made appropriate changes to the report. The full text of the Agency's comments and our detailed response is included in Appendix E.

**Evaluation of Management Comments.** The Special Inspector General for Iraq Reconstruction noted the comments provided by the Iraq Reconstruction Management Office addressed the corrective action and the recommendations.

SIGIR acknowledges the additional information provided by the United States Agency for International Development. Our detailed response to management comments from the United States Agency for International Development follows in Appendix E of the report.

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# Introduction

## Objective of the Project Assessment

The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties to enable appropriate action, when warranted. Specifically, we determined whether the completed project was operating at the capacity stated in the original contract or task order objective. To accomplish this, we determined if the project was at full capacity when accepted by the U.S. Government (USG), when transferred to Iraqi operators, and when observed during a site inspection by the Special Inspector General for Iraq Reconstruction (SIGIR). In addition, we determined if sustainability for full capacity operations was adequately planned and is likely to continue.

## Pre-Site Assessment Background

### Contract, Costs and Payments

The U.S. Agency for International Development (USAID) had a prime contract, SPU-C-00-04-00001-00, with Bechtel National, Inc. (BNI), which provided engineering, procurement, and construction services in support of the overall Iraq Infrastructure Reconstruction Program. Contract EEE-C-00-03-00018-00, under the prime contract's contract line item number 0010, Job Order (JO) Number 03-008, required the purchase and installation of 18 megawatts (MW) of electrical generation, which was required for a continuous and reliable supply of electricity, through a cost plus fixed fee contract at the Baghdad International Airport (BIAP).

JO 03-008 had eight amendments, which brought the project total to \$11,792,479. The generator sets were broken down into the following costs provided in Table 1.

Table 1. Contract Cost Breakdown				
Items	Cost	Quantity – Inoperable/Operable <sup>1</sup>	Inoperable Cost <sup>2</sup>	Operable Cost <sup>3</sup>
Cummins	\$2,873,401.00 <sup>4</sup>	7 – 5/2	\$2,052,429.29	\$820,971.71
Caterpillars	\$2,338,000.00 <sup>5</sup>	7 – 2/5	\$668,000.00	\$1,670,000.00
General Electric	\$5,832,000.00 <sup>6</sup>	3 – 3/0	\$5,832,000.00	\$0.00
Other	\$749,078.00 <sup>7</sup>	N/A	\$0.00	\$749,078.00
<b>Total</b>	<b>\$11,792,479.00<sup>8</sup></b>	<b>17 – 10/7</b>	<b>\$8,552,429.29</b>	<b>\$3,240,049.71</b>

<sup>1</sup> Quantity – Inoperable/Operable was observed at site visit on 3 March 2007

<sup>2</sup> Inoperable costs are equal to the cost of the item divided by the quantity of the item multiplied by the inoperable quantity.

<sup>3</sup> Operable costs are equal to the cost of the item divided by the quantity of the item multiplied by the operable quantity.

<sup>4</sup> Cost of Cummins generators provided in JO 03-008, Amendment 8.

<sup>5</sup> Cost breakdown provided by USAID.

<sup>6</sup> Cost breakdown provided by USAID.

<sup>7</sup> Cost of other items provided in JO 03-008, Amendment 8

<sup>8</sup> Total cost of JO 03-008

In addition, JO 03-008 had a commencement date of 27 May 2003 and a completion date of 30 June 2005, so the period of performance was approximately 25 months. The JO's Statement of Work (SOW) included specific requirements and stated that work should adhere to International or Iraqi Codes, as specified. The contractor provided all of the labor, equipment, tools, and materials necessary to provide diesel engine powered generator set power to the BIAP. No liquidated damages were included in the JO or the contract. The Warranty of Construction clause was incorporated into the contract and the standard one year from date of acceptance by the government construction warranty was applicable. However, the warranty coverage period had expired approximately 18 months before we conducted our site inspection on 3 March 2007.

### **Project Objective and Pre-Construction Description of the Facility**

The project objective was to install 18 MW of electrical power production capability for the BIAP power plant, which is located near the commercial passenger terminal in Baghdad, Iraq. The contract's SOW included specific requirements and stated that work should adhere to International or Iraqi Code as specified.

The prior existing generation system at BIAP consisted of three-Cockrill diesel-generating units and two-Deutz generators. USAID funded the inspection of the five existing generators, and determined that the three Cockrill units were not candidates for restoration as two engines were inoperable and spare parts were not readily available. In addition, USAID found that the two-Deutz generators appeared to be in decent condition, except for the requirement of refurbished parts. However, Deutz qualified technicians never mobilized to the site because of security concerns, and the USAID's other attempts to obtain qualified subcontractors to refurbish the generators were unsuccessful. So, USAID descope the refurbishment of the two-Deutz generators, and focused on installing 18 MW of new electrical power.

Based on the SIGIR's review of the SOW and USAID documents, it appeared that the project was reasonably well planned and focused on the high priority needs of BIAP to have continuous electricity. The SOW addressed the demands of BIAP in the summer and winter months on the electrical systems and installation of a new back-up generator system.

### **Statement of Work and Requirements**

The SOW included:

1. Demolishing the existing three Cockrill generators.
2. Installing and commissioning three new diesel generators.
3. Improving operations and maintenance access to the existing seven Cummins containerized diesel generator sets, while providing a control interface to the site master control.
4. Purchasing, shipping, installing, and connecting to the existing 11 kilovolt (kV) system the seven new containerized diesel generator sets (Caterpillar generators).
5. Providing a system to monitor and control the generator load and capacity.
6. Providing operations training for all control systems and maintenance training for routine and yearly maintenance.



## **During Construction Progress**

USAID provided quality assurance reports taken between the commencement date, 27 May 2003, until the completion date, 30 June 2005. USAID also provided several site photos taken by the U.S. Army Corps of Engineers (USACE) that documented some of the construction progress. In addition, USAID provided a Memorandum of Record that detailed the final photographic archive of the items being provided to BIAP on 17 September 2005.

### **Existing Generators and Building**

Per JO 03-008, the existing three-Cockrill generators were to be demolished and the engines, controls, and switchgear line-up were to be removed. Then the existing foundation was to be modified to accept three new diesel generators. Before installing the new generators, the contractor cleared the site. The existing Cockrill generators were demolished and removed from the power plant building. The contractor modified the existing building's foundation to accept the three new diesel generators. For the exterior view of the generator's building, see Site Photo 2.



**Site Photo 1. Existing Cockrill generator removal (Photo provided by USAID)**



**Site Photo 2. Exterior view of the generator's building (Photo provided by USAID)**

### **General Electric Generators**

The contractor was to install and commission three new diesel generators. The contractor installed three General Electric (GE) generator sets, each approximately 2.9 MW, shown in Site Photo 3.



**Site Photo 3. GE generator (Photo provided by USAID)**

### **Cummins Generators**

JO 03-008 stated that the contractor was to improve operations and maintenance access to the existing seven Cummins containerized diesel generator sets, while providing a control interface to the site master control. The contractor provided seven new Cummins generator sets, each approximately 0.85 MW. Site Photo 4 shows the aerial view of the seven Cummins generator sets, and Site Photo 5 shows the Cummins generator sets from the ground.



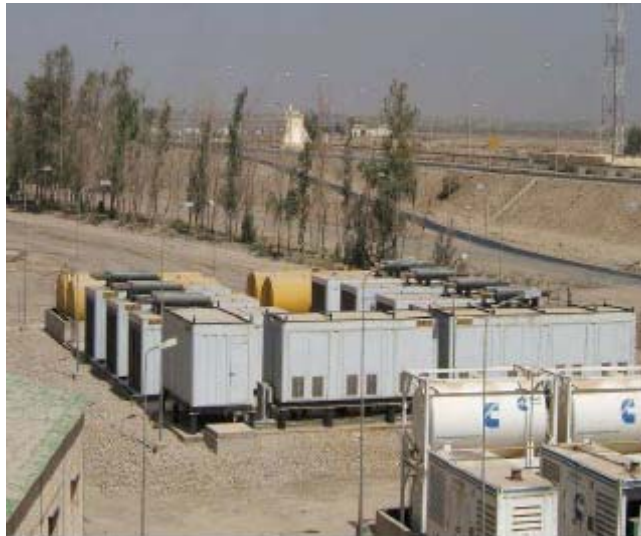
**Site Photo 4. Seven Cummins generators (Photo provided by USAID)**



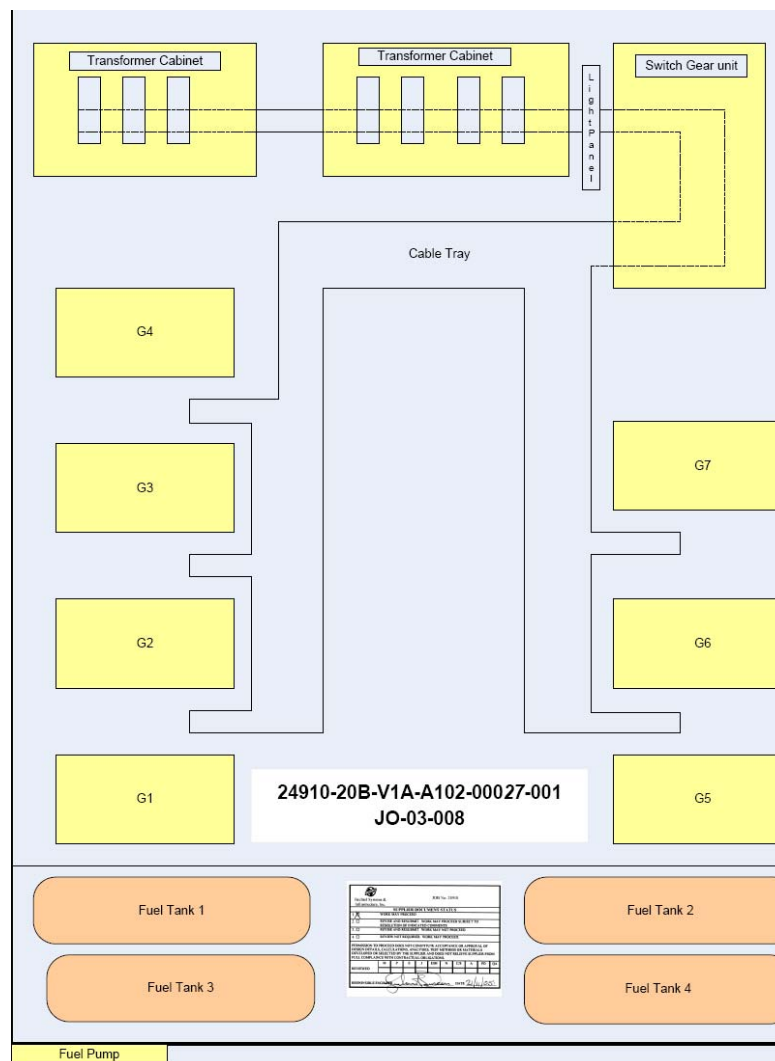
**Site Photo 5. Cummins generator sets (Photo provided by USAID)**

### **Caterpillar Generators**

In addition, the contractor was to purchase, ship, install, and connect to the existing 11 kV system the seven new Caterpillar containerized diesel generator sets. The aerial view of the Caterpillar generator set and the contractor's site layout are shown respectively in Site Photo 6 and Figure 1. The contractor provided seven new Caterpillar generators sets, each approximately 1.02 MW.



**Site Photo 6. Seven Caterpillar generators (Photo provided by USAID)**



**Figure 1. Site layout of Caterpillar generators**

**Existing 11 kilovolt System**

The contractor was to purchase, ship, install, and connect the existing 11 kilovolt (kV) system to the seven new containerized diesel generator sets. Site Photos 7 and 8, taken on 17 September 2005, show that the contractor provided 11 kV switchgear tray work and cables.



**Site Photo 7. 11 kilovolt system (Photo provided by USAID)**



**Site Photo 8. 11 kilovolt system (Photo provided by USAID)**

**Programmable Logic Controller System**

JO 03-008 stated that the contractor was to provide a system to monitor and control the generator load and capacity. Site Photos 9 and 10, show the contractor provided a Programmable Logic Controller (PLC) system.





**Site Photo 9. Programmable Logic Controller system (Photo provided by USAID)**



**Site Photo 10. Programmable Logic Controller system workstation (Photo provided by USAID)**

### **Operations, Maintenance, and Warranties**

JO 03-008 stated that the contractor was to provide operator training for all control systems and maintenance training for routine and yearly maintenance. According to the training records, the contractor provided training to the BIAP operators, who were selected by the BIAP maintenance manager for hands-on safe operations and control of the generating sets training, which included startup, shutdown, and load sharing for the Cummins, Caterpillar, and GE generator sets. In addition, the contractor provided training for the maintenance personnel, which included how to carry out daily and periodical equipment maintenance using correct maintenance procedures and training for the PLC system. USAID and BIAP representatives attended most of the formal and on-the-job training provided.

In addition, the contractor warranted the installation of the generator sets (Cummins, Caterpillar, and GE) for one year from the date of final acceptance of the work. According to the USAID's warranty list, the warranty period for the generator sets commenced on 7 October 2005. The BIAP power plant management stated that the Cummins and Caterpillar generator sets were accepted by the BIAP power plant management. However, the BIAP power plant management claimed that the commissioning and startup of the GE generator sets were not completed and were

not accepted. According to the USAID's warranty list and the property transfer memorandum of record dated 17 September 2005, BIAP received the Caterpillar, Cummins, and GE generator sets and the warranties.

## Site Assessment

With the assistance of a Department of State Private Security Detail (PSD), the SIGIR inspections team, the USAID Infrastructure Activity Manager, and the Gulf Region Division (GRD) Program Manager conducted a site visit on 3 March 2007. While on site, we observed the current condition of the facility and took photographs to document what was observed. The site visit and site photographs were considered the most reliable sources of information to support our conclusions because the 17 generator sets were turned over to the Government of Iraq (GoI) or the BIAP power plant on 11 September 2005. In addition, the SIGIR inspectors, the USAID representative, and the GRD representative conducted discussions with available BIAP power plant management. Since what was required (Project Objective and Pre-Construction Description) and what was provided during installation (During Construction Progress) have already been addressed in this report, the following photos and narratives describe what SIGIR observed. The Site Photos 11 through 49 were taken on 3 March 2007.

### General Observations

USAID's JO required the installation of 18 MW of power production capability. The construction and installation of the power plant met most of the elements of the JO SOW as observed by SIGIR on 3 March 2007. The Cummins, Caterpillar, and GE generator sets were provided by the contractor at a total cost of approximately \$11.8 million. However, 10 of the generator sets, approximate cost of \$8.6 million, were not operational at the power plant facility, so the BIAP power demand of approximately 8 MW in the winter and approximately 12 MW in the summer was not being met. During the site visit, approximately 6 MW of power was being produced. Table 2, below, provided the generator set manufacturer, the number of generator sets operational and non-operational, and the approximate total MW capacity and that which BIAP is currently receiving.

<b>Table 2. BIAP Power Plant Generation Capacity –3 March 2007</b>						
<b>Set No.</b>	<b>Generator Set Manufacturer</b>	<b>No. of Generator Sets</b>	<b>Capacity MW Each<sup>9</sup></b>	<b>Approximate Total Capacity MW<sup>10</sup></b>	<b>Nos. Of Generator Sets Operational</b>	<b>Approximate Current Capacity MW<sup>11</sup></b>
1	Cummins	7	0.85	5.95	2	1.7
2	Caterpillar	7	1.02	7.14	5	5.1
3	G E	3	2.90	8.70	0	0.0
4	Deutz	2	3.00	N/A	N/A	N/A
<b>TOTAL INSTALLED CAPACITY</b>				<b>21.79</b>	Total Current Cap.	<b>6.8</b>

<sup>9</sup> The Cummins, Caterpillar, and General Electric generator sets capacity for MW column was calculated based upon the site visit readings of the identification tags. The identification tags provide the wattage in kilowatts, and the kilowatts amount was divided by 1,000, which then equaled the individual megawatts capacity stated in Table 1.

<sup>10</sup> The individual MW capacity is multiplied by the number of generator sets to calculate the approximate total MW capacity.

<sup>11</sup> The number of operational generator sets multiplied by the generator set MW capacity equaled the approximate current MW capacity.

### **General Electric Generators**

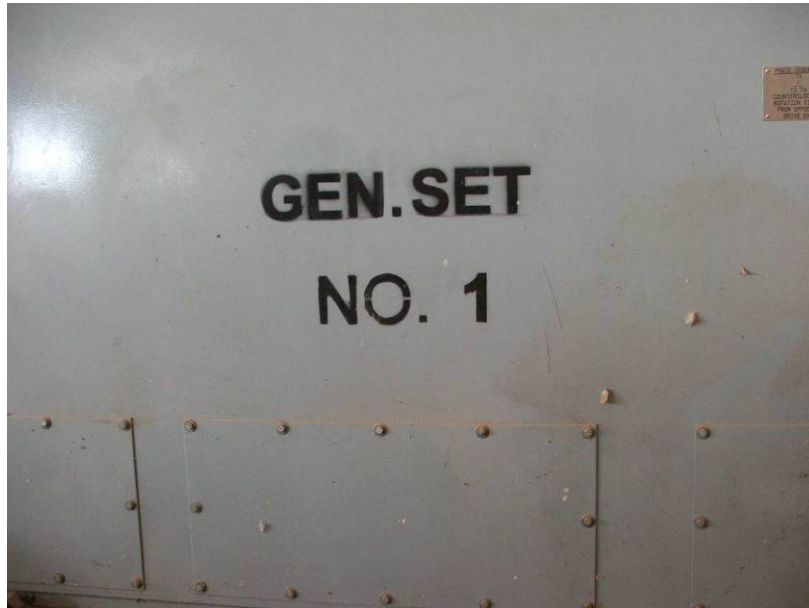
The contractor had installed three GE generator sets. Site Photo 11 shows the GE generator set; Site Photos 12, 14, and 16 provide the GE generator set number; and Site Photos 13, 15, and 17 identify the GE generator set identification numbers.

During the 3 March 2007 visit, the GE generator sets were not operational. The USAID and GRD representatives were unaware that the GE generator sets were not operational, and the BIAP power plant manager stated that the GE generator sets have been non-operational for approximately 17 months (September 2005 through March 2007). The three GE generator sets are necessary for the electrical power requirement at BIAP.

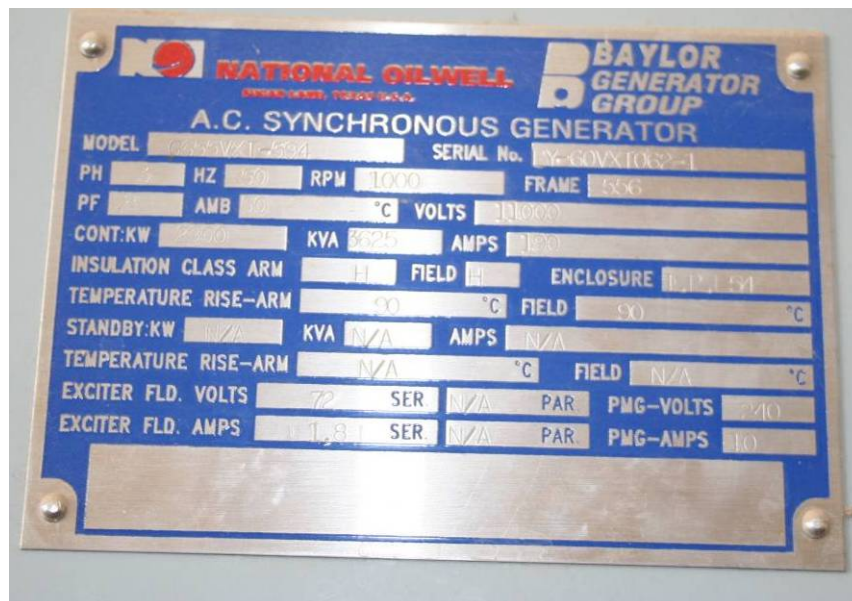


**Site Photo 11. General Electric generator**





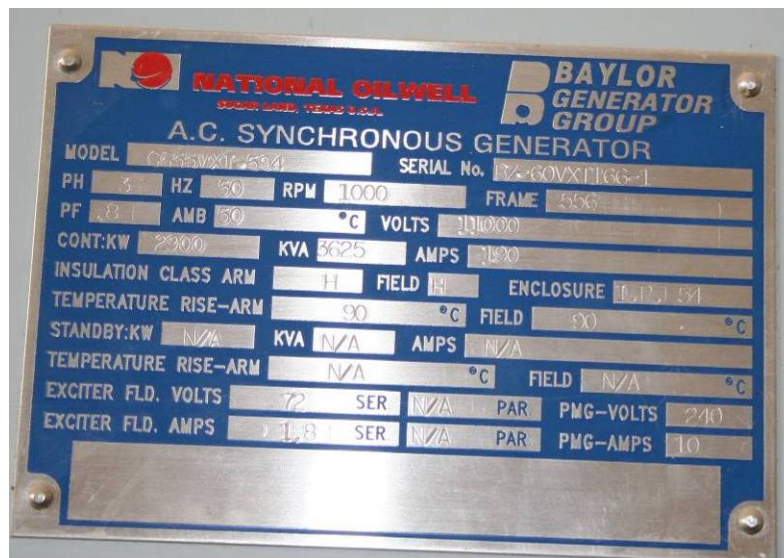
Site Photo 12. General Electric generator set 1



Site Photo 13. GE generator set 1 identification (ID) plate



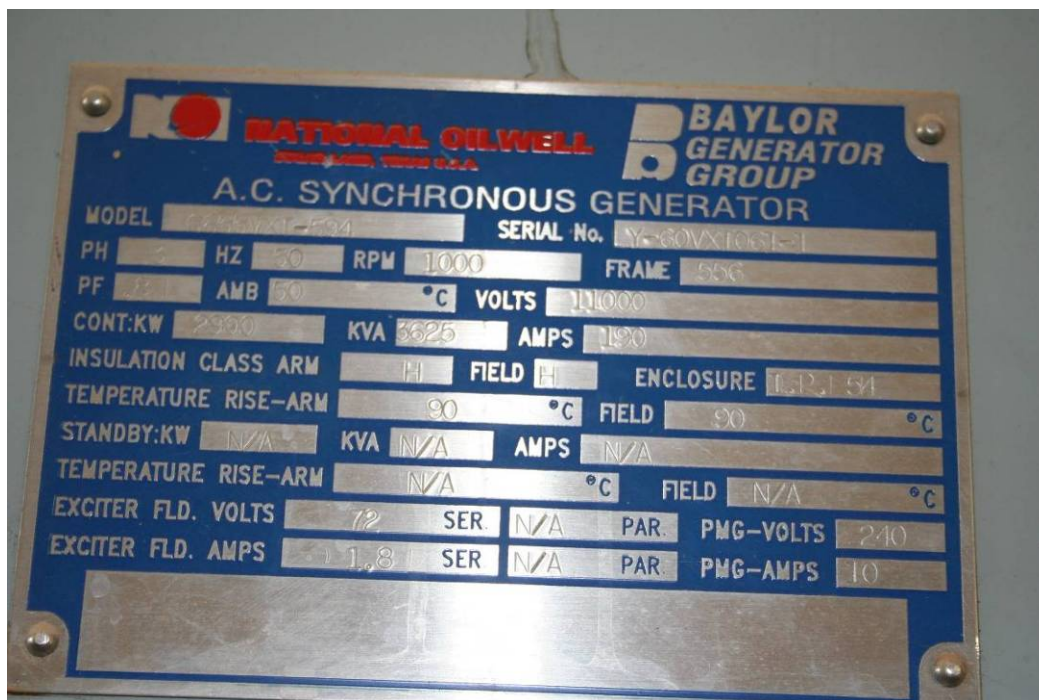
Site Photo 14. GE generator set 2



Site Photo 15. GE generator set 2 ID plate



Site Photo 16. GE generator set 3



Site Photo 17. GE generator set 3 ID plate

### Cummins Generators

The contractor provided the JO-specified seven Cummins generator sets, and only two of the seven were operational during the SIGIR site visit. Site Photos 18 through 30 (even only) provide the Cummins generator set number; and Site Photos 19 through 31 (odd

only) identify the Cummins generator set identification (ID) numbers. The Cummins generator area has its own fuel tanks, shown in Site Photo 32. Site Photo 33 shows one of the five Cummins generator sets that was not operational. The five Cummins generator sets are required to meet the electrical power requirement at the BIAP.



**Site Photo 18. Cummins generator set 1**

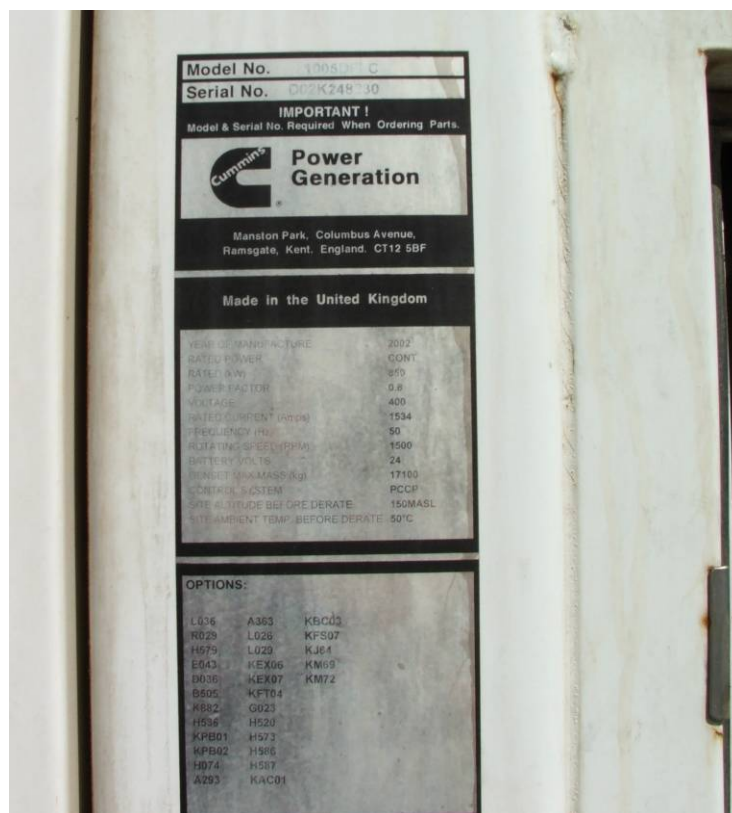


**Site Photo 19. Cummins generator set 1 ID plate faded from direct sunlight**





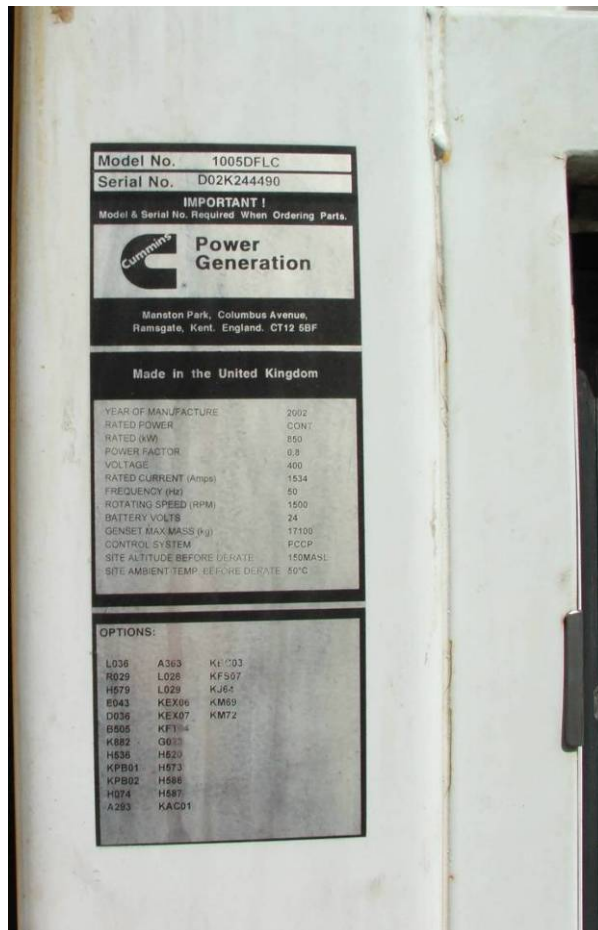
Site Photo 20. Cummins generator set 2



Site Photo 21. Cummins generator set 2 ID plate



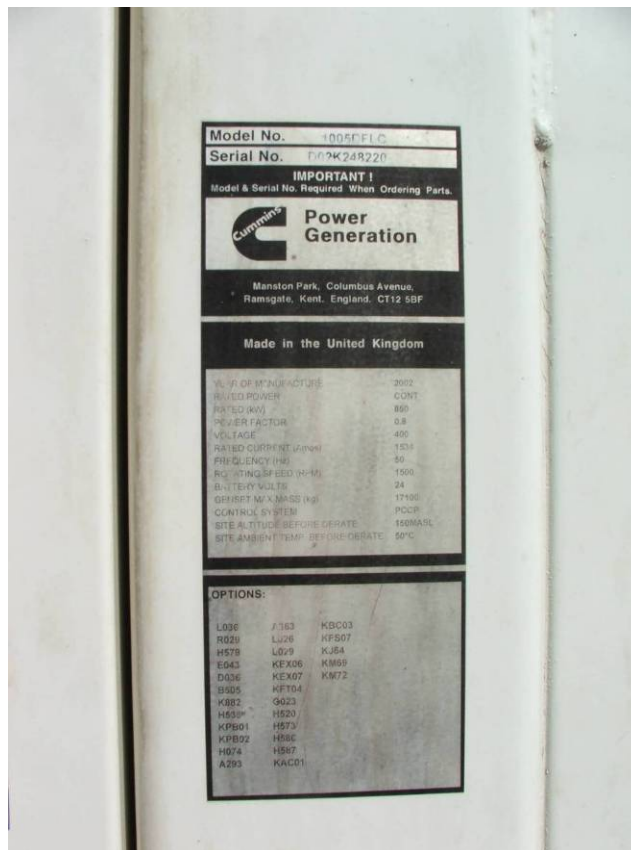
Site Photo 22. Cummins generator set 3



Site Photo 23. Cummins generator set 3 ID plate



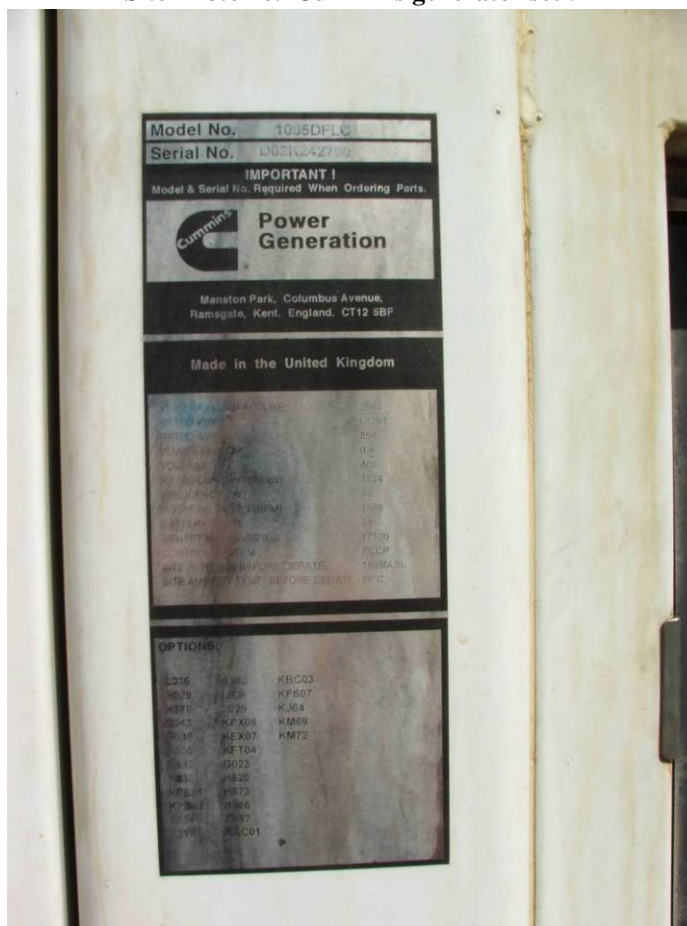
Site Photo 24. Cummins generator set 4



Site Photo 25. Cummins generator set 4 ID plate



**Site Photo 26. Cummins generator set 5**



**Site Photo 27. Cummins generator set 5 ID plate**





Site Photo 28. Cummins generator set 6



Site Photo 29. Cummins generator set 6 ID plate



Site Photo 30. Cummins generator set 7



Site Photo 31. Cummins generator set 7 ID plate



**Site Photo 32. Cummins generator sets' fuel tanks**



**Site Photo 33. Cummins generator set 2 disassembled & unprotected from weather**

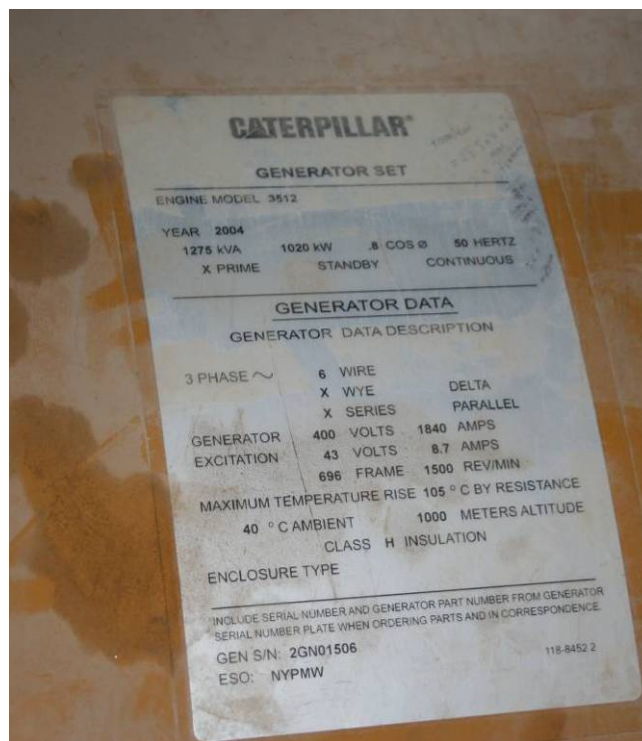
### **Caterpillar Generators**

The contractor purchased, shipped, installed, and connected the 11 kV system to the seven Caterpillar (CAT) generator sets as specified in the JO. Site Photos 34 through 46 (even only) provide the seven CAT generator set numbers; and Site Photos 35 through 47

(odd only) identify the seven CAT generator set identification (ID) numbers. Two of the seven CAT generator sets were found to be non-operational on the SIGIR site inspection.



Site Photo 34. Caterpillar generator set 1

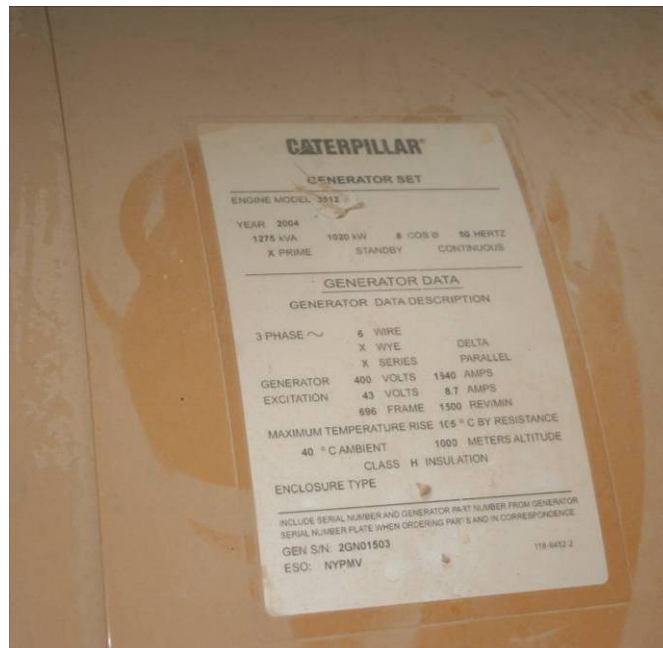


Site Photo 35. Caterpillar generator set 1 ID plate





**Site Photo 36. Caterpillar generator set 2**



**Site Photo 37. Caterpillar generator set 2 ID plate**



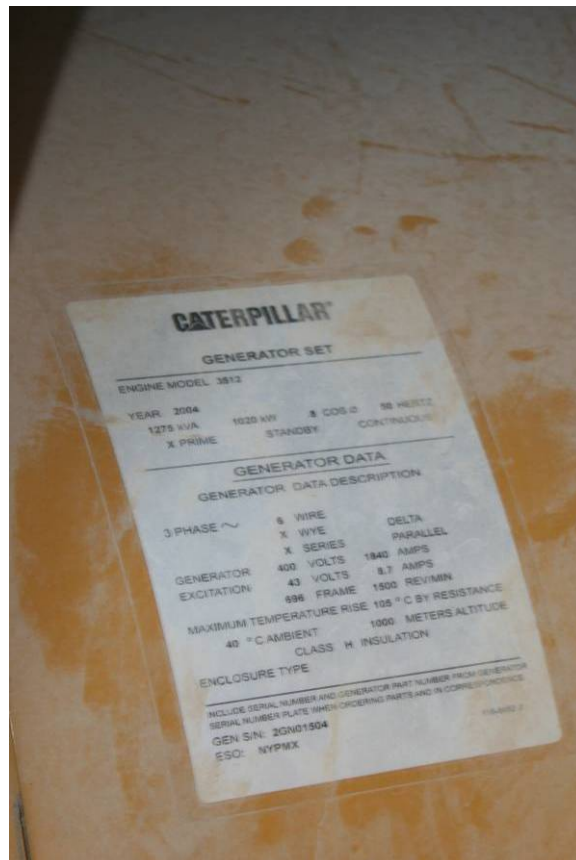
Site Photo 38. Caterpillar generator set 3



Site Photo 39. Caterpillar generator set 3 ID plate



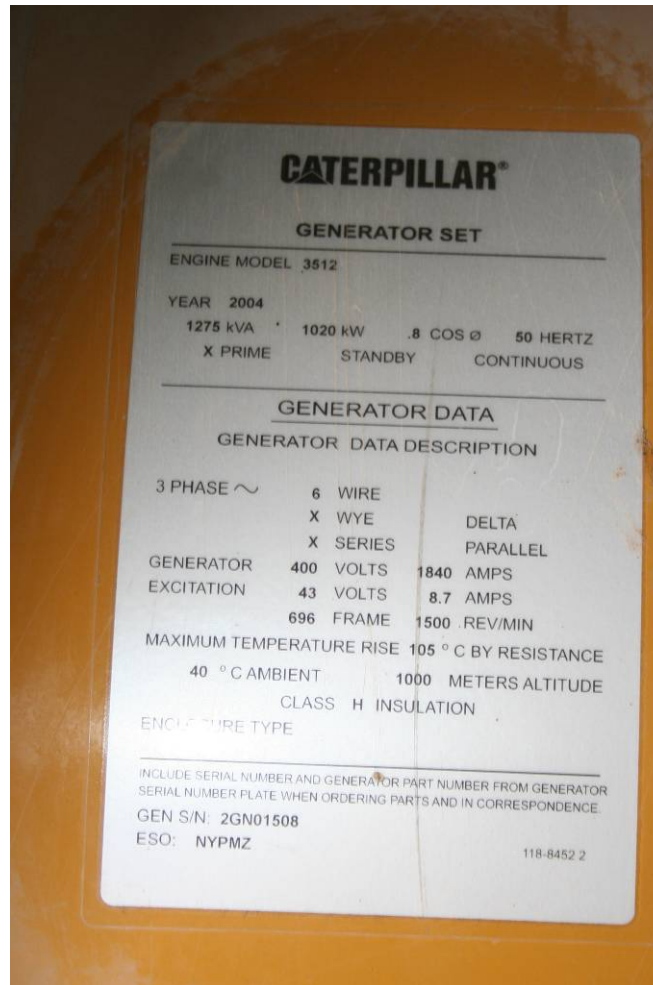
Site Photo 40. Caterpillar generator set 4



Site Photo 41. Caterpillar generator set 4 ID plate



**Site Photo 42. Caterpillar generator set 5**

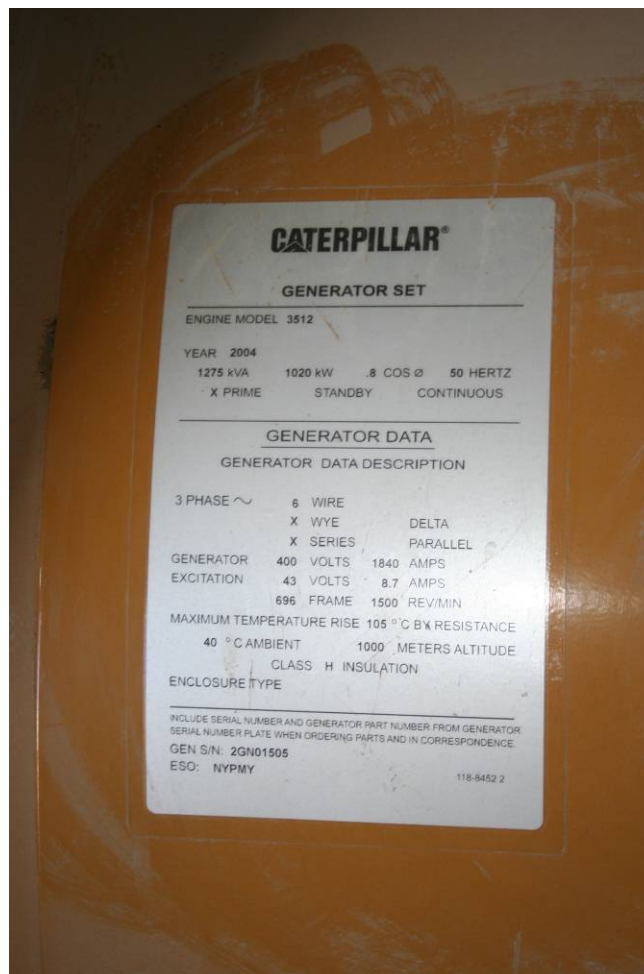


**Site Photo 43. Caterpillar generator set 5 ID plate**





Site Photo 44. Caterpillar generator set 6



Site Photo 45. Caterpillar generator set 6 ID plate



Site Photo 46. Caterpillar generator set 7



Site Photo 47. Caterpillar generator set 7 ID plate

### **11 kilovolt & PLC System**

The contractor purchased, installed, and connected the existing 11 kV system to the containerized generator sets, and provided a system to monitor and control the generator load and capacity. Site Photos 48 and 49 show the system control center for the

Cummins and CAT generator sets, respectively. The systems appeared to be working at the time of the SIGIR visit.



**Site Photo 48. System for Cummins generator sets**



**Site Photo 49. System for Caterpillar generator sets**

### **Operations and Maintenance**

JO 03-008 stated that the contractor was to provide operator training for all control systems and maintenance training for routine and yearly maintenance. During the site visit, the BIAP power plant management stated that there were no manuals and that the BIAP operators had not received training for the GE generators. The BIAP plant manager did not have an Operation and Maintenance (O&M) or Preventive Maintenance (PM) plan (e.g., maintaining a permanent daily log including operating data and maintenance work performed). The lack of an implemented O&M plan at the BIAP power plant could damage the generator sets and control system. Damaged generator sets

and/or control system will result in the BIAP power plant being unable to provide the standby power necessary to keep the airport open to commercial air traffic.

The BIAP power plant should provide standby power capability of approximately 18 MW in order to sustain power to the BIAP at all times in case power from the national grid is lost and to allow for scheduled preventive maintenance on the 17 generator sets. The lack of an O&M or PM plan on the Cummins and Caterpillar generator sets is a contributing factor to why only 7 of 17 of the generator sets were operational at the time of the SIGIR site inspection.

Significant maintenance and repairs on the Cummins and Caterpillar generator sets are now required in order to achieve and sustain needed power production capability for operation of the BIAP power plant. Full load operation at the BIAP power plant complex has not been realized as of this report. The sustainability of the power plant facility will not be achieved unless all of the equipment is properly operated, the operators trained, and the generator sets maintained using an O&M or PM plan.

## **Conclusions**

The Job Order required the contractor to purchase and install 18 megawatts of electrical generation, and the objective of the Job Order was met. The contractor installed 17 new generator sets with a total capacity of approximately 22 megawatts. The contractor turned the generator sets over to the United States Government, who then provided the generator sets to the Iraqi government on 11 September 2005. The Iraqi government did not sign any turnover documentation.

However, when the Special Inspector General for Iraq Reconstruction personnel inspected the generator sets on 3 March 2007, they found that 10 of the 17 sets were not operational. Five Cummins and two Caterpillar generator sets had not been maintained, and the three large General Electric generator sets had not been operated since the turnover. In order to achieve and sustain the necessary power production capability of the power plant, the Cummins and Caterpillar generator sets require repair and maintenance work. In addition, the General Electric generators require an inspection before operating and maintenance work determined by the inspection.

As a result, the current operating capacity of the Baghdad International Airport is approximately 6 megawatts, not the 18 megawatts of installed electrical generation. The total cost of the project was \$11.8 million, and currently approximately \$8.6 million worth of generator sets are non-operational.

## **Corrective Action**

The Department of State, Iraq Reconstruction Management Office, Electricity Section stated that the Electricity Section was in the process of repairing the connection between the Iraqi national grid and the Baghdad International Airport power grid, so the Baghdad International Airport may be able to use power from the Iraqi national grid. However, the generators are still required due to unreliable power from the grid and terrorist attacks on the national grid.

## **Recommendations**

The Iraq Reconstruction Management Office should coordinate with the appropriate Iraqi Ministry officials and develop plans to:

1. Perform the necessary critical repairs to the Cummins, Caterpillar, and General Electric generator sets.
2. Implement an effective Operations and Maintenance plan with a trained staff and spare parts for the Baghdad International Airport.

## **Management Comments**

Iraq Reconstruction Management Office Comments. The Iraq Reconstruction Management Office generally concurred with the information, conclusions and recommendations contained in the draft report. However, the Iraq Reconstruction Management Office Electricity would only be able to provide advice to the Ministry of Electricity.

United States Agency for International Development Comments. The United States Agency for International Development provided comments suggesting a number of clarifying points that SIGIR considered and made appropriate changes to the report. The full text of the Agency's comments and our detailed response is included in Appendix E.

## **Evaluation of Management Comments**

SIGIR noted the comments provided by the Iraq Reconstruction Management Office addressed the corrective action and the recommendations.

SIGIR acknowledges the additional information provided by the United States Agency for International Development. Our detailed response to management comments from the United States Agency for International Development follows in Appendix E of the report.

## **Appendix A. Scope and Methodology**

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We performed this project assessment from January through April 2007 in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included an engineer/inspector and an auditor/inspector.

In performing this Project Assessment we:

- Reviewed the Prime Contract, the Contract Job Order, and the Job Order modifications;
- Reviewed the U.S. Agency for International Development report and related pre-construction and during construction photos taken by the U.S. Army Corps of Engineers;
- Conducted field level discussions with the U.S. Agency for International Development Infrastructure Activity Manager and the Gulf Region Division Program Manager;
- Conducted an on-site assessment on 3 March 2007; and
- Briefed the results of the fieldwork and our conclusions with the U.S. Agency for International Development and the Iraq Reconstruction Management Office Program Manager.

## Appendix B. Acronyms

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BIAP	Baghdad International Airport
BNI	Bechtel National, Inc.
CAT	Caterpillar
DoS	Department of State
FAR	Federal Acquisition Regulations
GE	General Electric
GoI	Government of Iraq
GRD	Gulf Region Division of the United States Army Corps of Engineers
JO	Job Order
kV	kilovolt
MW	megawatts
PSD	Private Security Detail
SIGIR	Special Inspector General for Iraq Reconstruction
SOW	Statement of Work
USG	United States Government
USACE	United States Army Corps of Engineers
USAID	United State Agency for International Development

## **Appendix C. Report Distribution**

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### **Department of State**

Secretary of State

Senior Advisor to the Secretary and Coordinator for Iraq

Director of U.S. Foreign Assistance/Administrator, U.S. Agency for  
International Development

Director, Office of Iraq Reconstruction

Assistant Secretary for Resource Management/Chief Financial Officer,  
Bureau of Resource Management

U.S. Ambassador to Iraq

Director, Iraq Reconstruction Management Office

Mission Director-Iraq, U.S. Agency for International Development

Inspector General, Department of State

### **Department of Defense**

Secretary of Defense

Deputy Secretary of Defense

Under Secretary of Defense (Comptroller)/Chief Financial Officer

Deputy Chief Financial Officer

Deputy Comptroller (Program/Budget)

Deputy Assistant Secretary of Defense-Middle East, Office of Policy/International  
Security Affairs

Inspector General, Department of Defense

Director, Defense Contract Audit Agency

Director, Defense Finance and Accounting Service

Director, Defense Contract Management Agency

### **Department of the Army**

Assistant Secretary of the Army for Acquisition, Logistics, and Technology

Principal Deputy to the Assistant Secretary of the Army for Acquisition,  
Logistics, and Technology

Deputy Assistant Secretary of the Army (Policy and Procurement)

Director, Project and Contracting Office

Commanding General, Joint Contracting Command-Iraq/Afghanistan

Assistant Secretary of the Army for Financial Management and Comptroller

Chief of Engineers and Commander, U.S. Army Corps of Engineers

Commanding General, Gulf Region Division

Chief Financial Officer, U.S. Army Corps of Engineers

Auditor General of the Army

### **U.S. Central Command**

Commanding General, Multi-National Force-Iraq

Commanding General, Multi-National Corps-Iraq

Commanding General, Multi-National Security Transition Command-Iraq

Commander, Joint Area Support Group-Central



## **Other Federal Government Organizations**

Director, Office of Management and Budget  
Comptroller General of the United States  
Inspector General, Department of the Treasury  
Inspector General, Department of Commerce  
Inspector General, Department of Health and Human Services  
Inspector General, U.S. Agency for International Development  
President, Overseas Private Investment Corporation  
President, U.S. Institute for Peace

## **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

### **U.S. Senate**

Senate Committee on Appropriations  
    Subcommittee on Defense  
    Subcommittee on State, Foreign Operations and Related Programs  
Senate Committee on Armed Services  
Senate Committee on Foreign Relations  
    Subcommittee on International Operations and Organizations, Democracy and Human Rights  
    Subcommittee on International Development and Foreign Assistance, Economic Affairs and International Environmental Protection  
    Subcommittee on Near East and South and Central Asian Affairs  
Senate Committee on Homeland Security and Governmental Affairs  
    Subcommittee on Federal Financial Management, Government Information, Federal Services and International Security  
    Permanent Subcommittee on Investigations  
    Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia

### **U.S. House of Representatives**

House Committee on Appropriations  
    Subcommittee on Defense  
    Subcommittee on State, Foreign Operations, and Related Programs  
House Committee on Armed Services  
House Committee on Oversight and Government Reform  
    Subcommittee on Government Management, Organization, and Procurement  
    Subcommittee on National Security and Foreign Affairs  
House Committee on Foreign Affairs  
    Subcommittee on Middle East and South Asia  
Subcommittee on International Organizations, Human Rights, and Oversight


## Appendix D. IRMO Management Comments

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After looking at the report, the only comment I have is in reference to IRMO mentoring the GOI on implementing an O&M plan (page ii). Remember that if speaking in specific terms of IRMO Electricity, our capability is in the strictest sense only to give advice to the Ministry of Electricity. I'm not sure where the line is drawn on who owns and is responsible for the back-up generation (MoE or MoT, etc). I seem to recall that we had some discussion on that, but don't recall if any conclusion was drawn. The same would apply to the paragraph near the bottom of page 31, though that reference mentions IRMO, but not Electricity specifically, so I'm not sure whether it is intended to mean IRMO Electricity or possibly IRMO Transportation. That said, I would be supportive in the sense of providing what info is available to me and speaking up for the need to get properly maintained and operated back-up generation of sufficient capacity to whomever is in a position to influence the outcome.

IRMO Electricity

## Appendix E. USAID Management Comments

	<b>USAID   IRAQ</b> FROM THE AMERICAN PEOPLE
<b>MEMORANDUM</b>	
<b>TO:</b>	Brian Flynn, Assistant Inspector General for Inspections, SIGIR
<b>FROM:</b>	Hilda Arellano, Mission Director, USAID/Iraq <i>for M</i>
<b>DATE:</b>	April 1, 2007
<b>SUBJECT:</b>	USAID Comments on Draft Report SIGIR PA-07-097, Baghdad International Airport Power System Enhancement
<p>USAID/Iraq is pleased to present these comments on the subject draft report.</p> <p>1. Page i, second paragraph: The USAID contract numbers are presented incorrectly. Contract No. EEE-C-00-03-00018-00, awarded in 2003, is commonly known as the IRRF I or Phase I contract. Contract No. SPU-C-00-04-00001-00 is the contract awarded in January 2004, and is commonly known as the IRRF II or Phase II contract. These are two distinct contracts. The BIAP generation project that is the subject of the SIGIR inspection were procured, installed and commissioned under Job Order 03-008 under the Phase I contract, EEE-C-00-03-00018-00. Additionally, after June 25, 2003, all line items in the Phase I contract were collapsed into a single line item. Therefore, the reference to line item 0010 is incorrect.</p> <p>2. Page i, penultimate paragraph (regarding the lack of O&amp;M by the GOI): The report notes that neither the Cummins nor Caterpillar units were maintained by the GOI, but does not mention the new GE units. The GE units were apparently not utilized or maintained by the GOI following their turnover. USAID believes the draft report's statement that the GE units require an additional inspection before being operated leaves the impression that there is something wrong with them, which is an unknown. As you are aware, GRD is currently undertaking an assessment of all BIAP generation to determine what maintenance or repair is required to put the facility into full operation, including the GE units. USAID suggests the report be revised to make these facts clear.</p> <p>3. Page 1, second paragraph (Contract costs and payments section):</p> <p>a) The correct cost of the Caterpillar generators is \$2.3 M, not the stated \$21.3 M.</p> <p>b) The draft report states that no liquidated damages were included in the contract. The fact that this is mentioned gives an implication that SIGIR somehow considered to be a deficiency. It has no bearing on the stated objective of the assessment which is "... to determine whether the standby power system at the Baghdad International Airport (BIAP) is operating at the capacity stated in the original contract or job order (JO) objective." We therefore recommend that the statement about liquidated damages be removed.</p>	

c) The Phase I contract does not include FAR 52.246-21 (Warranty of Construction).. Therefore we recommend that the reference to this FAR provision be deleted. Please note that the contract does include a warranty provision which reads as follows:

“C.III.6.12. Unit Acceptance – project Turn-over and Warranty Period: The contractor shall ensure that all equipment, systems and construction have a one-year turn-over warranty and this warranty is supported by and the responsibility of the subcontractor. Bank guarantee (value of 10% of subcontract amount), if possible, is to be kept as a guarantee that the warranty activities will be performed when requested. In accordance with procedures approved by USAID, all turn over of completed projects to the proper authorities will be with the appropriate one-year warranty.”

4. Page 2, first paragraph, section regarding the Deutz Generators: The statement that “Deutz qualified technicians never mobilized to the site and USAID’s other attempts to obtain qualified subcontractors to refurbish the generators were unsuccessful” should be clarified. Due to security concerns, Deutz technicians refused to mobilize to the BIAP site.
5. Page 2, second paragraph: The report states “it appeared that the project was reasonably well planned”. USAID requests that the words “appeared” and “reasonably” be deleted. Otherwise, the implication is made that things may not be as they appear, which is something not supported by the SIGIR inspection.
6. Page 2, (during construction progress section): The statement which reads “[b]etween the commencement date, 27 May 2003, until the completion date on 30 June 2005 (approximately 25 months), USAID was unable to provide any quality assurance reports” is not accurate. During the course of the assessment, SIGIR did not ask USAID if quality assurance (Q&A) reports were prepared for the project. In fact, numerous Q&A reports were prepared and are available for SIGIR’s reference. Therefore, we request that this statement be deleted from the report or, at least, be revised to correctly reflect that Q&A reports were prepared during the course of the project.
7. Page 3, last paragraph: A more complete description of the contractor’s actions would read “The contractor installed and commissioned three GE generator sets...” since the contractor did in fact commission the generators.
8. Page 5, site photo 5: The generators pictured are Caterpillar, not Cummins.
9. Page 9, first paragraph, fourth sentence: We recommend that the sentence which reads “However, the BIAP power plan management claimed that the commissioning and startup of the GE generators sets were not completed and were not accepted” be revised to read as follows: “During SIGIR’s March 3, 2007 site visit, the BIAP power plant manager indicated that commissioning and startup of the GE generators sets were not completed and that these generators were not accepted by the GOI. However, information presented by USAID verified that these generators were fully installed and commissioned at the project’s completion and were included in the package of 17 generators USAID turned over to the Government of Iraq under the project.”
10. Page 9, Site Assessment section, first paragraph: Please change the reference to the “USAID Program Manager” to the “USAID Infrastructure Activity Manager.”

11. Page 30, first paragraph: USAID requests that a factual statement be included after the BIAP Plant Manager's statement, "there were no manuals and that the BIAP operators had not received training for the GE generators." USAID records provided to SIGIR show that O&M manuals were provided and signed for by the same BIAP manager. USAID records provided to SIGIR further include documentation indicating that a significant number of training hours were provided to BIAP staff for the USAID-provided equipment, including the GE generators. These records include training class attendance sheets listing the BIAP attendees with their signatures. This documentation is on the CD that USAID provided to SIGIR before the beginning of the assessment, in the "O&M readiness" section of the CD.

12. Page 30, first paragraph (Lack of an O&M plan): USAID notes that the draft report omits the need for an O&M plan for the GE units and the switchgear and control system, mentioning only the Cummins and Caterpillar units. USAID also believes that the O&M discussion in the report shifts between a focus on a need for a plant-wide O&M plan to a plan targeted to the Cummins and Caterpillar generators, and then back again. USAID recommends that the report maintain a broad, general focus on the need for an O&M plan at the BIAP plant to cover all equipment, and avoid narrowly focusing on specific generators.

1. **USAID Comments.** “Page i, second paragraph: The USAID contract numbers are presented incorrectly. Contract No. EEE-C-00-03-00018-00, awarded in 2003, is commonly known as the IRRF I or Phase I contract. Contract No. SPU-C-00-04-00001-00 is the contract awarded in January 2004, and is commonly known as the IRRF II or Phase II contract. These are two distinct contracts. The BIAP generation project that is the subject of the SIGIR inspection were procured, installed and commissioned under Job Order 03-008 under the Phase I contract, EEE-C-00-03-00018-00. Additionally, after June 25, 2003, all line items in the Phase I contract were collapsed into a single line item. Therefore, the reference to line item 0010 is incorrect.”

**SIGIR Response.** The contract line item 0010 reference originated under Contract No. EEE-C-00-03-00018-00, which was awarded in 2003, that is referred to as the IRRF I or Phase I contract provides a brief synopsis of the contract history.

2. **USAID Comments.** “Page i, penultimate paragraph (regarding the lack of O&M by the GOI): The report notes that neither the Cummins nor Caterpillar units were maintained by the GOI, but does not mention the new GE units. The GE units were apparently not utilized or maintained by the GOI following their turnover. USAID believes the draft report’s statement that the GE units require an additional inspection before being operated leaves the impression that there is something wrong with them, which is an unknown. As you are aware, GRD is currently undertaking an assessment of all BIAP generation to determine what maintenance or repair is required to put the facility into full operation, including the GE units. USAID suggests the report be revised to make these facts clear.”

**SIGIR Response.** The GE units were apparently not utilized, so the GOI would not have maintained the GE units. Therefore, before the GE units are operated an additional inspection should be required to make sure the GE units are functional.

3. **USAID Comments.** “Page 1, second paragraph (Contract costs and payments section):
  - a) The correct cost of the Caterpillar generators is \$2.3 M, not the stated \$21.3 M.
  - b) The draft report states that no liquidated damages were included in the contract. The fact that this is mentioned gives an implication that SIGIR somehow considered to be a deficiency. It has no bearing on the stated objective of the assessment which is “...to determine whether the standby power system at the Baghdad International Airport (BIAP) is operating at the capacity stated in the original contract or job order (JO) objective.” We therefore recommend that the statement about liquidated damages be removed.
  - c) The Phase I contract does not include FAR 52.246-21 (Warranty of Construction). Therefore we recommend that the reference to this FAR provision be deleted. Please note that the contract does include a warranty provision which reads as follows:

“C.III.6.12. Unit Acceptance – project turn-over and Warranty Period: The contractor shall ensure that all equipment, systems and construction have a one-year turn-over warranty and this warranty is supported by and the responsibility of the subcontractor. Bank guarantee (value of 10% of subcontract amount), if possible, is to be kept as a guarantee that the warranty activities will be performed when requested. In accordance with procedures approved by USAID, all turn over of completed projects to the proper authorities will be with the appropriate one-year warranty.” ”



**SIGIR Response.**

- a) Corrected the typo for the cost of the Caterpillar generators which is \$2.3 M.
- b) The statement that no liquidated damages were included in the contract will remain in the report. No implication has been given that SIGIR perceives this to be a deficiency.
- c) The FAR 52.246-21 reference was deleted; however, the remaining warranty section was left in its entirety.

4. **USAID Comments.** “Page 2, first paragraph, section regarding the Deutz Generators: The statement that “Deutz qualified technicians never mobilized to the site and USAID’s other attempts to obtain qualified subcontractors to refurbish the generators were unsuccessful” should be clarified. Due to security concerns, Deutz technicians refused to mobilize to the BIAP site.”

**SIGIR Response.** Although the statement does not need modification, since the statement is providing background and not addressing the main objectives of the report, SIGIR modified the statement by adding security concerns.

5. **USAID Comments.** “Page 2, second paragraph: The report states “it appeared that the project was reasonably well planned.” USAID requests that the words “appeared” and “reasonably” be deleted. Otherwise, the implication is made that things may not be as they appear, which is something not supported by the SIGIR inspection.”

**SIGIR Response.** The extent of the design for this project did not warrant a detailed analysis of design. Our conclusion is based on the extent of work we performed.

6. **USAID Comments.** “Page 2, (during construction progress section): The statement which reads “[b]etween the commencement date, 27 May 2003, until the completion date on 30 June 2005 (approximately 25 months), USAID was unable to provide any quality assurance reports” is not accurate. During the course of the assessment, SIGIR did not ask USAID if quality assurance (Q&A) reports were prepared for the project. In fact, numerous Q&A reports were prepared and are available for SIGIR’s reference. Therefore, we request that this statement be deleted from the report or, at least, be revised to correctly reflect that Q&A reports were prepared during the course of the project.”

**SIGIR Response.** During the course of the assessment, SIGIR did ask USAID if quality assurance reports were prepared for the project. The reports were not provided; however, we have revised the statement with the presentation of the quality assurance reports from the USAID.

7. **USAID Comments.** “Page 3, last paragraph: A more complete description of the contractor’s actions would read “The contractor installed and commissioned three GE generator sets...” since the contractor did in fact commission the generators.”

**SIGIR Response.** There is no need for clarification of the statement in the report.

8. **USAID Comments.** “Page 5, site photo 5: The generators pictured are Caterpillar, not Cummins.”

**SIGIR Response.** Site Photo 5 shows Cummins generators, not Caterpillars.

9. **USAID Comments.** “Page 9, first paragraph, fourth sentence: We recommend that the sentence which reads “However, the BIAP power plan management claimed that the commissioning and startup of the GE generator sets were not completed and were

not accepted” be revised to read as follows: “During SIGIR’s March 3, 2007 site visit, the BIAP power plant manager indicated that commissioning and startup of the GE generator sets were not completed and that these generators were not accepted by the GOI. However, information presented by USAID verified that these generators were fully installed and commissioned at the project’s completion and were included in the package of 17 generators USAID turned over to the Government of Iraq under the project.””

**SIGIR Response.** The report addresses the issues and is quite clear that during SIGIR’s March 3, 2007 site visit, the BIAP power plant manager indicated that commissioning and startup of the GE generator sets were not completed and that these generators were not accepted by the GOI. In addition, the report states that the USAID provided documentation to support that the generators were installed and commissioned.

10. **USAID Comments.** “Page 9, Site Assessment section, first paragraph: Please change the reference to the “USAID Program Manager” to the “USAID Infrastructure Activity Manager”.”

**SIGIR Response.** Incorporated the change in the report.

11. **USAID Comments.** “Page 30, first paragraph: USAID requests that a factual statement be included after the BIAP Plant Manager’s statement, “there were no manuals and that the BIAP operators had not received training for the GE generators.” USAID records provided to SIGIR show that O&M manuals were provided and signed for by the same BIAP manager. USAID records provided to SIGIR further include documentation indicating that a significant number of training hours were provided to BIAP staff for the USAID-provided equipment, including the GE generators. These records include training class attendance sheets listing the BIAP attendees with their signatures. This documentation is on the CD that USAID provided to SIGIR before the beginning of the assessment, in the “O&M readiness” section of the CD.”

**SIGIR Response.** The report’s section “Operations, Maintenance, and Warranties” (page 9) states that training and manuals were provided to the Iraqi recipient consistent with contract requirements. Section “Operations and Maintenance” (page 31) discusses the adequacy of the Iraqi operation and maintenance program at the time of our inspection. The fact that the operator on site stated, during our inspection, that there were no manuals and that the BIAP operators had not received training does not infer that contract requirements were not met.

12. **USAID Comments.** “Page 30, first paragraph (Lack of an O&M plan): USAID notes that the draft report omits the need for an O&M plan for the GE units and the switchgear and control system, mentioning only the Cummins and Caterpillar units. USAID also believes that the O&M discussion in the report shifts between a focus on a need for a plant-wide O&M plan to a plan targeted to the Cummins and Caterpillar generators, and then back again. USAID recommends that the report maintain a broad, general focus on the need for an O&M plan at the BIAP plant to cover all equipment, and avoid narrowly focusing on specific generators.”

**SIGIR Response.** SIGIR recommended implementing an operations and maintenance plan with a trained staff and spare parts for the Baghdad International Airport. There is no shifting or omitting the need for the operation and maintenance plan for the entire Baghdad International Airport.

## **Appendix F. Project Assessment Team Members**

The Office of the Assistant Inspector General for Inspections, Office of the Special Inspector General for Iraq Reconstruction, prepared this report. The principal staff members who contributed to the report were:

Angelina Johnston

Wesley Snowden